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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,482	06/26/2003	Pankaj K. Mehrotra	K-1436PC1	5664
27877	7590	03/28/2008	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			SAVAGE, JASON L	
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			1794	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/606,482

**Applicant(s)**

MEHROTRA ET AL.

**Examiner**

JASON L. SAVAGE

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-34 and 55-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 55 is/are allowed.
- 6) ☒ Claim(s) 25-34, 56 and 57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-11-08 has been entered.

***Claim Objections***

Claim 56 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The limitation in claim 56 that the heat treating step occurs at a temperature between about 1600 degrees Centigrade and about 2200 degrees Centigrade is recited in parent claim 25.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25-34 and 56-57 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no basis for the limitation in claim 25, line 6 that the heat treatment temperature is "about 1600 degrees Centigrade". Claims 26-34 depend from claim 25 and thus are rejected for reciting the same claim limitation. Claim 56 recites the same limitation of "about 1600 degrees Centigrade".

Regarding claim 57, Mixture VI in Table II exemplifies an embodiment containing 34.4% alumina, 19.1% silicon carbide whiskers and 46.2% titanium carbonitride. However, there does not appear to be a basis in the Application as originally filed for the alumina content to be between 30-40, silicon carbide whiskers between 15-25% and titanium carbonitride between 35-55% further wherein the titanium carbonitrides content is greater than the alumina content such as is claimed.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 25-28, 31-34 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 5,858,181) as evidenced by Suzuki (US 5,168,080)

Regarding claims 25 and 28, Jindal teaches a ceramic cutting insert which may be heat treated by sintering or by hot pressing to form a densified insert (col. 3, ln. 32-47). Jindal further teaches that the cutting insert may be subjected to a grinding process to provide a fine surface finish (col. 8, ln. 46-67).

Regarding the limitation that the heat treatment is performed at the claimed temperature, the temperature range that is claimed is similar to that which would be used to sinter the cutting insert of Jindal. Jindal teaches that the cutting insert material may be silicon nitride materials and may be sintered (col. 3, ln. 32-65). Suzuki teaches that according to well known methods silicon nitride and silicon carbide materials are sintered at about 1700-1850° and 2000°C respectively (col. 1, ln. 20-40). As such, the recitation that the cutting insert of Jindal is sintered would meet the limitation of heat treating the ceramic insert within the claimed temperature range.

Regarding the limitation that the heat treatment is performed after the cutting insert has been ground, Jindal is not clear as to any particular order for the grinding and heat treating by sintering steps to occur. However, the claims are drawn to an article, not the method of making. As such, it is the position of the Examiner that the cutting insert of Jindal would meet the claim limitations for the article claimed. In the alternative, if there is any difference, the difference must be minor and obvious. The burden is shifted to applicants to show that grinding the insert prior to heat treating would produce an article which is structurally distinct from an insert which may be ground after a sintering heat treatment step. Otherwise a prima facie case of anticipation, or in the alternative, of obviousness has been established. The Patent and

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Trademark Office can require Applicant to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on Applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 U.S.P.Q. 431 (CCPA 1977). To date Applicant has provided no evidence or reasoning as to how the claimed article would differ from that of the prior art.

Regarding claim 26, Jindal teaches that the insert is coated (col. 8, ln. 46-67).

Regarding claims 27-28 and 31, Jindal teaches that the insert may be subjected to conventional ceramic powder processing techniques and densification such as hot pressing or sintering (col. 3, ln. 31-47). As such, it would have been obvious to one of ordinary skill in the art to have subjected the insert of Jindal to a sintering and/or hot isostatically pressing step with a reasonable expectation of success. One would have been motivated to have modified the insert of Jindal in such a manner so as to insure the insert was sufficiently densified and exhibited suitable strength and toughness properties.

Regarding claims 32-34, Jindal teaches that the insert may be alumina based and may contain materials such as silicon carbide whiskers, zirconia, as well as carbonitrides of material such as Ti (col. 4, ln. 1-32). Although Jindal does not

exemplify an embodiment wherein titanium carbonitrides are contained in the cutting insert, it would have been obvious to have added then since it teaches carbide and carbonitrides of titanium may be included.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 5,858,181) in view of Moriguchi et al (US 5,296,008).

Jindal teaches what is set forth above and further recites that cutting inserts of various materials including silicon nitride based materials may be processed such as is recited by Jindal (col. 2, ln. 1-17). However, Jindal is silent as to the cutting insert having the composition claimed.

Moriguchi teaches a ceramic cutting insert which is heat treated by sintering having excellent wear resistance and toughness (col. 1, ln. 10-14). Moriguchi further teaches that teaches cutting inserts having a composition which is silicon nitride based and is preferably contained in an amount of at least 90% by weight (col. 4, ln. 53-68). Moriguchi further teaches that other elements may be contained in the insert such as aluminum nitride, alumina, magnesia and yttria in amounts that overlap the ranges claimed (col. 5, ln. 10-30).

It would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that any silicon nitride based composition could be employed in the invention of Jindal including the silicon nitride based composition of Moriguchi with a reasonable expectation of success.

Claims 25-28, 30 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'174 (JP 04-136174 translation provided by Applicant on 8-4-03).

JP'174 teaches a coated ceramic cutting insert which may be sintered, ground and subsequently heat treated (page 3, Embodiments). JP'174 further teaches that the final heat treatment is performed at a temperature between 1050-1400°C to modify the matrix surface (page 3, Embodiments and page 1, What is Claimed).

Although the claim limitations recite that the heat treatment temperature is about 1600°C, the claims are drawn to an article, not the method of making. Absent a teaching or showing how the cutting insert of the present invention would differ structurally or have different properties, it would not provide a patentable distinction over the prior art. Applicant has provided no evidence to show that heat treating the ground insert at about 1600°C would produce a materially distinct article from the one formed by JP'174 which is heat treated at 1400°C.

Regarding claims 27 and 31, JP'174 does not teach that the cutting insert is hot isostatically pressed after sintering and prior to grinding. However, hot pressing is known in the art to for densifying the insert and improving the strength and toughness of the formed insert. It would have obvious to one of ordinary skill in the art to have subjected the insert to hot pressing in order to densify and improve the properties of the insert.

Regarding claim 30, JP'174 teaches that the ceramic cutting insert may have a composition which is silicon nitride based and may further contain additives of alumina, aluminum nitride, magnesia and zirconia (p. 3, Embodiments).



Regarding claim 56, Applicant has not shown how the claimed article having been heated to about 1600°C would be structurally distinct from the insert of JP'174 which may be heated up to 1400°C.

***Allowable Subject Matter***

Claim 55 is allowed.

***Response to Arguments***

Applicant's arguments filed 2-11-08 have been fully considered but they are not persuasive.

**Rejection of Claims 25-34 under 35 USC §112, 1<sup>st</sup> paragraph**

Applicant argues that the limitation of about 1600 degrees in claims 25 and 56 is supported and not new matter since several mixtures disclose a temperature equal to 1650°C which clearly allow persons of ordinary skill in the art to recognize that applicants invented what is claimed is not persuasive. One of ordinary skill would not clearly envision 1650°C as being 'about 1600°C'. As such, the claim limitation in proposed claim 25 and previously presented claim 56 would be considered new matter. It is noted claim 56 is not an original claim.

Applicant further argues that the claim limitations in claim 57 are supported since an example falls within the limitations of the claim. This argument is not persuasive. Just because an example falls within a range does not provide support for an entire range. Applicant has not provided proof that the claimed range is supported in the Application as originally filed.

**Rejection of Claims 25-28 and 31-34 under 35 USC §103(a) over Jindal et al  
as Evidenced by Suzuki**

Applicant states that the specification contains many descriptions that disprove the Examiner's position that heating a ground insert to the claimed temperature range after (emphasis added) the insert has been ground would not provide any structural difference over the prior art which may heat the ground insert to the temperature range prior to (emphasis added) grinding.

Applicant provides a summary of the examples from the specification; however, the cited examples are not commensurate with that which is taught by Jindal. Jindal explicitly recites the cutting tool insert may be made by conventional ceramic powder processing techniques and densified by pressureless sintering. The sintered (emphasis added) cutting insert of Jindal is considered equivalent to the heat treated insert claimed by Applicant. None of the cited examples in the specification make clear that the non-inventive embodiments were subjected to sintering either prior to or after (emphasis added) grinding. As such, Applicant has not met the burden of showing that the prior art product of Jindal does not necessarily or inherently possess characteristics of the claimed products.

Regarding Applicant's argument that Jindal's 'heat treatment step' occurs at 400 C and one could not properly expanded the cleaning treatment to encompass a heat treating step with a temperature equal to 1600-2200; as recited above, the heat treatment step in Jindal being relied upon is the sintering step, not the cleaning step. As

evidenced by Suzuki, it is well known that temperatures of 1700-1850 and 2000 C are used to sinter (emphasis added) silicon nitride and silicon carbide materials such as those taught in Jindal.

**Rejection of Claims 25-26, 28 and 30 under 35 USC §103(a) over Jindal et al in view of Moriguchi**

Applicant argues that the recited combination is improper since Moriguchi is drawn to an unground insert. However, as recited in the Final Rejection, both Jindal and Moriguchi are generally drawn to ceramic cutting inserts comprising silicon nitride based materials which are heat treated by sintering. As such, Applicant's assertion that the references are not combinable or that they are combined solely on the basis of hindsight reasoning is not persuasive.

**Rejection of Claims 25-28 and 31-34 under 35 USC §103(a) over JP'174**

Applicant argues that JP'174 expressly discourages a heat treatment above 1400°C and thus would not meet on the claim limitation that the heat treatment is performed at a lower limit of about 1600. However, the claims are drawn to the article, not the method of making. Absent a teaching or showing how the cutting insert of the present invention would differ structurally or have different properties, it would not provide a patentable distinction over the prior art. Applicant has provided no evidence to show that heat treating the ground insert at about 1600°C would produce a materially distinct article from the one formed by JP'174 which is heat treated at 1400°C.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. SAVAGE whose telephone number is (571)272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Savage/  
3-19-08

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